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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,528	12/12/2005	Burkhard Becker	LLP145WOUS	4396

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EXAMINER	
FLORES, LEON	

ART UNIT	PAPER NUMBER
2611	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Docketing@eschweilerlaw.com

Office Action Summary	Application No.	Applicant(s)	
	10/511,528	BECKER ET AL.	
	Examiner	Art Unit	
	LEON FLORES	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 8-18* is/are rejected.

7)☒ Claim(s) *5-7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 October 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims (1-12) are objected to because of the following informalities:

In claim 1, there are no transitional phrases, for example, "comprising", "consisting essentially of" and "consisting of" in the claims. Appropriate correction is required.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims (13-18) are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. The instant claims neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. In claim 13, applicant fails to teach what apparatus is implementing this method claim.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. **Claims (1-4, 8-9, 12-16) are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (hereinafter Kim) (US Patent 7,116,723 B2)**

Re claim 1, Kim discloses a device for calculating feedback signaling message (FSM) bits by means of which the signals sent from two antennas of a base station are influenced with reference to their phase difference and/or their amplitudes with the aid of two estimated channel impulse responses, wherein the device is in hard-wired form, and wherein the device is configured to generate a complex phasor from components of the two channel impulse responses. (See figs 3-4 & col. 7, line 7 – col. 8, line 16 & col. 9, line 9 - col. 10, line 67)

Although the reference of Kim does compute FSM bits based on channel responses, it fails to explicitly teach further configured to produce an FSM bit by a

rotation and projection of the phasor and a comparison of the rotated and projected phasor with a threshold value.

However, the reference of Kim does suggest further configured to produce an FSM bit by a rotation and projection of the phasor (See fig. 3: 320 & col. 7, lines 19-22, lines 53-59) and a comparison of the rotated and projected phasor with a threshold value. (See fig. 3: 330 & col. 7, lines 23-27 "maximizing a received SINR")

Therefore, it would have been obvious to one of ordinary skills in the art to incorporate these features into the system of Kim, in the manner as claimed, for the benefit of optimizing the communication system.

Re claim 2, Kim further discloses that wherein the components of the two channel impulse responses are applied at inputs of the device (See fig. 3: 310), and wherein the FSM bit is provided at an output of the device. (See fig. 3: 340 “FSM bits are computed at the mobile station and then transmitted to the base station")

But the reference of Kim fails to explicitly teach that wherein control signals are applied at control inputs of the device, the FSM bit being calculated as a function of the components of the two channel impulse responses and the control signals.

However, Kim does suggest wherein control signals are applied at control inputs of the device (See fig. 3: 330 “the optimum weight is detected by maximizing the received SINR" & fig. 5A & B & col. 6, lines 29-36 "feedback information is based on an index indicating a basis vector”), the FSM bit being calculated as a function of the components of the two channel impulse responses and the control signals.

Therefore, it would have been obvious to one of ordinary skills in the art to incorporate these features into the system of Kim, in the manner as claimed, for the benefit of optimizing the communication system.

Re claim 3, Kim further discloses that wherein the device comprises a logic unit configure to receive and selectively arrange the two channel impulse responses, and a processing unit connected downstream of the logic unit configured to process the two channel impulse responses based on the selective arrangement thereof. (See fig. 3)

Re claim 4, Kim further discloses that wherein the components of the two channel impulse responses are present at inputs of the logic unit, wherein the logic unit has outputs whose number is equal to the number of its inputs. (See fig. 3: 310 & 320)

But the reference of Kim fails to explicitly teach that wherein the inputs of the logic unit are connected to the outputs of the logic unit as a function of at least one of the control signals.

However, the reference of Kim does suggest that wherein the inputs of the logic unit are connected to the outputs of the logic unit as a function of at least one of the control signals. (See fig. 3 & fig. 5A & B & col. 6, lines 29-36 "feedback information is based on an index indicating a basis vector")

Therefore, it would have been obvious to one of ordinary skills in the art to incorporate these features into the system of Kim, in the manner as claimed, for the

benefit of optimizing the communication system.

Re claim 8, the reference of Kim fails to explicitly teach that wherein the control signals are stored in the form of control bits in a read-only memory.

However, the reference of Kim does suggest that wherein the control signals are stored in the form of control bits in a read-only memory. (See fig. 2: 210 & col. 6, lines 23-53)

Therefore, it would have been obvious to one of ordinary skills in the art to incorporate these features into the system of Kim, in the manner as claimed, for the benefit of optimizing the communication system.

Re claim 9, Kim further discloses that wherein the device is designed for the UMTS standard. (See col. 5, lines 44-46)

Re claim 12, Kim further discloses that A mobile radio terminal having a device as claimed in claim 1. (See col. 7, lines 40-46)

Re claim 13, Kim discloses a method for calculating FSM bits by means of which the signals sent from two antennas of a base station are influenced with reference to their phase difference and/or their amplitudes with the aid of two estimated channel impulse responses comprising: (a) producing a complex phasor from components of the

two channel impulse responses. (See figs 3-4 & col. 7, line 7 – col. 8, line 16 & col. 9, line 9 - col. 10, line 67)

Although the reference of Kim does compute FSM bits based on channel responses, it fails to explicitly teach (b) calculating an FSM bit by rotation and projection of the phasor.

However, the reference of Kim does suggest (b) calculating an FSM bit by rotation and projection of the phasor. (See fig. 3: 320 & col. 7, lines 19-22, lines 53-59)

Therefore, it would have been obvious to one of ordinary skills in the art to incorporate these features into the system of Kim, in the manner as claimed, for the benefit of optimizing the communication system.

Re claim 14, the reference of Kim fails to explicitly teach that wherein the rotation and projection of the phasor is determined by control signals.

However, the reference of Kim does suggest that wherein the rotation and projection of the phasor is determined by control signals. (See fig. 3: 330 “the optimum weight is detected by maximizing the received SINR" & fig. 5A & B & col. 6, lines 29-36 "feedback information is based on an index indicating a basis vector”)

Therefore, it would have been obvious to one of ordinary skills in the art to incorporate these features into the system of Kim, in the manner as claimed, for the benefit of optimizing the communication system.

Re claim 15, the reference of Kim fails to explicitly teach that wherein calculating the FSM bit comprises performing a threshold value comparison after the rotation and projection of the phasor.

However, the reference of Kim does suggest that wherein calculating the FSM bit comprises performing a threshold value comparison after the rotation and projection of the phasor. (See fig. 3: 330 & col. 7, lines 23-27 "maximizing a received SINR")

Therefore, it would have been obvious to one of ordinary skills in the art to incorporate these features into the system of Kim, in the manner as claimed, for the benefit of optimizing the communication system.

Re claim 16, Kim further discloses that wherein the method is designed for the UMTS standard. (See col. 5, lines 44-46)

6. **Claims (10-11 & 17-18) are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (hereinafter Kim) (US Patent 7,116,723 B2), as applied to claims 1 & 13 above, and further in view of Salonen et al. (hereinafter Salonen) (US Patent 6,611,675 B1)**

Re claim 10, the reference of Kim fails to explicitly teach that wherein the control signals are a function of the slot number of the FSM bit to be calculated, and of a CLTD mode.

However, Salonen does. (See fig. 1B & C & col. 1, lines 14-56) Salonen suggests that wherein the control signals are a function of the slot number of the FSM bit to be calculated, and of a CLTD mode.

Therefore, taking the combined teachings of Kim and Salonen as a whole, it would have been obvious to one of ordinary skills in the art to incorporate this feature into the system of Kim, in the manner as claimed and as taught by Salonen, for the benefit of optimizing the communication system.

Re claim 11, the combination of Kim and Salonen further discloses that wherein the control signals are a function of whether the slot number of the FSM bit to be calculated is an even or odd number. (In Salonen, see fig. 1B & C & col. 1, lines 14-56)

Claim 17 has been analyzed and rejected w/r to claim 10 above.

Claim 18 has been analyzed and rejected w/r to claim 10 above.

7. **Claims (1 & 13) are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (hereinafter Kim) (US Patent 7,116,723 B2) in view of Salonen et al. (hereinafter Salonen) (US Patent 6,611,675 B1)**

Re claim 1, Kim discloses a device for calculating feedback signaling message (FSM) bits by means of which the signals sent from two antennas of a base station are influenced with reference to their phase difference and/or their amplitudes with the aid of two estimated channel impulse responses, wherein the device is in hard-wired form,

and wherein the device is configured to generate a complex phasor from components of the two channel impulse responses. (See figs 3-4 & col. 7, line 7 – col. 8, line 16 & col. 9, line 9 - col. 10, line 67)

Although the reference of Kim does compute FSM bits based on channel responses, it fails to explicitly teach further configured to produce an FSM bit by a rotation and projection of the phasor and a comparison of the rotated and projected phasor with a threshold value.

However, Salonen does. (See figs. 3-4 & col. 4, lines 46-56, col. 5, lines 5-23) Salonen discloses the concept of estimating FSM bits based on channel estimates, rotating and projecting phasors, and comparing to a threshold.

Therefore, taking the combined teachings of Kim and Salonen as a whole, it would have been obvious to one of ordinary skills in the art to incorporate this feature into the system of Kim, in the manner as claimed and as taught by Salonen, for the benefit of optimizing the communication system.

Claim 13 has been analyzed and rejected w/r to claim 1 above.

Allowable Subject Matter

8. Claims (5-7) are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Lee et al. (US Publication 2002/0006168 A1)
- Kim et al. (US Patent 6,766,144 B2)
- Kim et al. (US Patent 7,277,407 B2)
- Kim et al. (US Patent 6,892,059 B1)
- Tanaka. (US Patent 7,099,634 B2)
- Hoshino et al. (US Publication 2002/0186785 A1)
- Hottinen et al. (US Publication 2003/0073410 A1)

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEON FLORES whose telephone number is (571)270-1201. The examiner can normally be reached on Mon-Fri 7-5pm Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/L. F./
Examiner, Art Unit 2611
February 24, 2009

/David C. Payne/

Supervisory Patent Examiner, Art Unit 2611